Liquid Alum
Safety Data Sheet

Safety Data Sheet #: CHE-5001S
Revision Date: October 3, 2023 Version:12

1. Identification

Product identifier

Product Identity Liquid Alum

Other means of identification Aluminum Sulfate, liquid, Liquid Alum

Product Form Mixture

Relevant identified uses of the substance or mixture and uses advised against

Alum is used as a coagulating agent in municipal and industrial water and wastewater treatment and as an additive in papermaking.

Restrictions on use:
For use in water treatment, refer to NSF dosage information.

Details of the supplier of the safety data sheet

Company Name

Chemtrade Logistics Inc. (Canada)
155 Gordon Baker Road Suite 300
Toronto, Ontario M2H 3N5

Chemtrade Logistics Inc. (US)
90 East Halsey Road, Suite 200
Parsippany, NJ 07054

Emergency

24 hour Emergency Telephone No.

Chemtrade Emergency Contact: (866) 416-4404 (Toronto)
CHEMTREC +1-800-424-9300
For Chemical Emergency, Spill, Leak, Fire, Exposure, or Accident, call CHEMTREC – Day or Night

Customer Service:

For SDS Info: (416) 496-5856
www.chemtradelogistics.com

2. Hazard(s) identification

Exposure may aggravate pre-existing eye, skin, or respiratory conditions.

Classification of the substance or mixture

Metal corrosion; H290	May be corrosive to metals.
Skin corrosion/irritation category 1C; H314	Causes severe skin burns and eye damage.
Serious eye damage / eye irritation, category 2; H319	Causes serious eye irritation.
Aquatic toxicity (acute), category 3; H402	Harmful to aquatic life.

Label elements

Danger

H290 May be corrosive to metals.

H314 Causes severe skin burns and eye damage.

H319 Causes serious eye irritation.

H402 Harmful to aquatic life.

[Prevention]:

P234 Keep only in original container.

P260 Do not breathe dust, fume, mist, vapours or spray.

P264 Wash thoroughly after handling.

P273 Avoid release to the environment.

P280All Wear protective gloves, protective clothing, eye protection, face protection.

[Response]:

P301+330+331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P301+330+331 IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.

P303+361+353 IF ON SKIN (or hair): Remove, take off immediately all contaminated clothing. Rinse skin with water, shower.

P304+340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305+351+338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P310 Immediately call a POISON CENTER, doctor or physician.

P337+313 If eye irritation persists: Get medical advice or attention.

P363 Wash contaminated clothing before reuse.

P390 Absorb spillage to prevent material damage.

[Storage]:

P405 Store locked up.

P406 Store in a corrosive resistant, container with a resistant inner liner.

[Disposal]:

P501 Dispose of contents or container in accordance with local and national regulations.

2.3. Other hazards

This product contains no PBT/vPvB chemicals.

This product contains no endocrine disrupting chemicals.

3. Composition/information on ingredients

This product contains the following substances that present a hazard within the meaning of the Hazardous Products Regulations.

Ingredient/Chemical Designations	Weight %	GHS Classification	Notes
Water **CAS Number:7732-18-5**	**30 - 55**	**Not classified**	**No additional notes**
Aluminum sulfate **CAS Number: 0010043-01-3** **Synonyms:** **Note: Aluminum sulfate is as Al2(SO4)3●14H2O (Dry Aluminum Sulfate).** **, Aluminium sulfate, Sulfuric acid, aluminum salt (3:2)**	**45 - 70**	**Serious eye damage / eye irritation, category 1;H318** **Metal corrosion;H290** **Aquatic toxicity (acute), category 3;H402**	**No additional notes**

The actual concentration or concentration range is withheld as a trade secret.

*PBT/vPvB - PBT-substance or vPvB-substance.

The full texts of the phrases are shown in Section 16.

The specific chemical identity and/or exact percentage of composition are withheld as a trade secret within the meaning of the OSHA Hazard Communication Standard [29 CFR 1910.1200].

Section 4. First aid measures

Description of first aid measures

General In all cases of doubt, or when symptoms persist, seek medical attention. Never give anything by mouth to an unconscious person.

Inhalation Remove to fresh air, keep patient warm and at rest. If unconscious, place in the recovery position and obtain immediate medical attention. Give nothing by mouth.

Eyes Irrigate copiously with clean water for at least 30 minutes, holding the eyelids apart and seek medical attention. Remove contact lenses, if present and easy to do. Continue rinsing.

Skin Remove contaminated clothing. Wash skin thoroughly with soap and water or use a recognized skin cleanser. Drench affected area with water for at least 30 minutes. Obtain medical attention if irritation develops or persists.

Ingestion If swallowed obtain immediate medical attention. Keep at rest. Do NOT induce vomiting.

Most important symptoms and effects, both acute and delayed

Overview Contact with skin causes severe skin burns. Causes serious eye damage.

Acute Health Effects: the substance causes serious eyes damage and severe burns.

EYE: Contact causes serious eye damage. Causes permanent damage to the cornea, iris, or conjunctiva with redness, pain, swelling, blurred vision, and severe burns (Immediate). No delayed effects from eye contact are expected. No chronic effects from eye contact are known.

SKIN: Causes severe irritation which will progress to chemical burns. Symptoms may include redness, pain, serious skin burns, and blisters. (Immediate). No

delayed effects from skin contact are expected. No chronic effects from skin contact are known.
INHALATION: May be corrosive to the respiratory tract. Prolonged exposure may cause irritation of the upper respiratory passages. (Immediate). May cause delayed pulmonary edema. No chronic effects from inhalation are known.
INGESTION: May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract (Immediate). No delayed symptoms from ingestion are expected. No chronic effects from ingestion are known.

Indication of Any Immediate Medical Attention and Special Treatment Needed: If exposed or concerned, get medical advice and attention.
See section 2 for further details.

Eyes Causes serious eye irritation.

Skin Causes severe skin burns and eye damage.

Section 5. Fire-fighting measures

Extinguishing media

Suitable Extinguishing Media: Water spray, dry chemical, foam, carbon dioxide.

Unsuitable extinguishing media: Do not use water jet, or heavy water stream. Use of heavy stream of water may spread fire.

Special hazards arising from the substance or mixture

Hazardous decomposition: Can liberate toxic and corrosive fumes of SO2 and SO3 under extreme conditions when boiled to dryness or heated above 600 ° C (1112 °F).

Keep only in original container.

Do not breathe dust, fume, mist, vapours or spray.

Advice for fire-fighters

As with all fires, wear positive pressure, self-contained breathing apparatus, (SCBA) with a full-face piece and protective clothing. Persons without respiratory protection should leave area. Wear SCBA during clean up immediately after fire. No smoking.

Fire Hazard: Product is not flammable but may burn at high temperatures.

Explosion Hazard: Product is not explosive. Contact with metallic substances may release flammable hydrogen gas.

Firefighting Instructions: Do not enter fire area without proper protective equipment, including respiratory protection. Use water spray or fog for cooling exposed containers. Remove containers from fire area if this can be done without risk. **Exercise caution when fighting any chemical fire.**

Hazardous reactions will not occur under normal conditions.

Other Information: Do not allow run-off from fire fighting to enter drains or water courses.

ERG Guide No. 154

Section 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

General Measures: Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Avoid contact with eyes, skin and clothing. Provide

adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment. See Section 8.

Use good personal hygiene practices. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Promptly remove soiled clothing and wash thoroughly before reuse.

Use only outdoors or in a well-ventilated area. Do not breathe mist, spray, and vapours.

Do not get in eyes, on skin, or on clothing. Use appropriate personal protection equipment (PPE). Wear protective gloves, eye protection, face protection (refer to section 8 for more details).

Environmental precautions

Prevent entry to sewers and public waters. Avoid release to environment.

See Section 8 for exposure controls and personal protection and Section 13 for disposal considerations.

Methods and material for containment and cleaning up

Upon arrival at the scene, a first responder is expected to recognize the presence of dangerous goods, protect oneself and the public, secure the area, and call for the assistance of trained personnel as soon as conditions permit.

Ventilate area.

Contain, dilute cautiously with water, and neutralize with soda ash or lime.

Containment: Contain any spills with dikes or absorbents to prevent migration and entry into sewers or streams. As an immediate precautionary measure, isolate spill or leak area in all directions. Ventilate area.

Contain, dilute cautiously with water, and neutralize with soda ash or lime.

Methods for Clean up: Clean up spills immediately and dispose of waste safely. Transfer spilled material to a suitable container for disposal. Contact competent authorities after a spill.

Section 7. Handling and storage

Precautions for safe handling

Handle containers carefully to prevent damage and spillage.

Store locked up.

Use good personal hygiene practices. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Promptly remove soiled clothing and wash thoroughly before reuse.

Use only outdoors or in a well-ventilated area. Do not breathe mist, spray, and vapours.

Do not get in eyes, on skin, or on clothing. Use appropriate personal protection equipment (PPE). Wear protective gloves, eye protection, face protection (refer to section 8 for more details).

See section 2 for further details. - [Prevention]:

Conditions for safe storage, including any incompatibilities

Keep container closed when not in use. Store in a dry, cool place. Keep/Store away from extremely high or low temperatures and incompatible materials. Store in original container or corrosive resistant and/or lined container.

Comply with applicable regulations.

Incompatible materials: Non acid-proof metals (such as aluminum, copper and iron), bases, unalloyed steel, galvanized surfaces.

See section 2 for further details. - [Storage]:

Specific end use(s)

Alum is used as a coagulating agent in municipal and industrial water and wastewater treatment and as an additive in papermaking.

Restrictions on use:
For use in water treatment, refer to NSF dosage information.

Section 8. Exposure controls / personal protection

Control parameters

Exposure

CAS No.	Ingredient	Source	Value
0010043-01-3	Aluminum sulfate	ACGIH	No Established Limit
		OSHA	No Established Limit
		NIOSH	TWA 2 mg/m^3
		Alberta	No Established Limit
		British Columbia	No Established Limit
		Manitoba	No Established Limit
		New Brunswick	No Established Limit
		Newfoundland and Labrador	No Established Limit
		Nova Scotia	No Established Limit
		Northwest Territories	No Established Limit
		Nunavut	No Established Limit
		Ontario	No Established Limit
		Prince Edward Island	No Established Limit
		Quebec	No Established Limit
		Saskatchewan	No Established Limit
		Yukon	No Established Limit

Exposure controls

Respiratory Use NIOSH/MSHA approved respirator, following manufacturer's recommendations when concentrations exceed permissible exposure limits.

Eyes Chemical safety goggles and face shield.

Skin Chemical resistant clothing such as coveralls/apron and boots should be worn. Avoid skin contact. Wear protective gloves. Wear suitable protective clothing. **Materials for Protective Clothing:** Chemically resistant materials and fabrics.

Engineering Controls **Exposure Controls Appropriate Engineering Controls:** Emergency eyewash fountains and safety showers should be available in the immediate vicinity of any potential exposure. Ensure adequate ventilation, especially in confined areas. Ensure all national/local regulations are observed.

Other Work Practices Put on appropriate personal protective equipment. Chemically compatible gloves, protective clothing, and chemical resistant safety goggles,face shield. Insufficient

ventilation: wear respiratory protection. Use good personal hygiene practices. Wash hands and other exposed areas with mild soap and water before eating, drinking or smoking and when leaving work. Promptly remove soiled clothing and wash thoroughly before reuse.
Use only outdoors or in a well-ventilated area. Do not breathe mist, spray, and vapours.
Do not get in eyes, on skin, or on clothing. Use appropriate personal protection equipment (PPE). Wear protective gloves, eye protection, face protection (refer to section 8 for more details).

See section 2 for further details.

Section 9. Physical and chemical properties

9.1. Information on basic physical and chemical properties

Physical State	liquid
Color	Clear
Odor	Odorless
Freezing point	-15.56 °C (3.99 °F)
Initial boiling point	101 °C (213.8 °F)
Flammability (solid, gas)	Not applicable
Upper/lower flammability or explosive limits	**Lower Explosive Limit:** No available information
	Upper Explosive Limit: No available information
Flash Point	°F °C, Test method: (Open/Close cup)
Auto-ignition temperature	No available information
Decomposition temperature	No available information
pH	1.4 – 2.6
Viscosity (cSt)	No available information
Solubility in Water	Completely Soluble in water.
Partition coefficient n-octanol/water (Log Kow)	No available information
Vapour pressure (Pa)	No available information
Relative Density	No available information
Vapour Density	No available information
Evaporation rate (Ether = 1)	No available information
	Not applicable
Specific Gravity	1.30 - 1.35

Other information

No other relevant information.

Section 10. Stability and reactivity

Reactivity

May be corrosive to metals. Contact with metals may evolve flammable hydrogen gas. May react exothermically with water releasing heat. Adding an acid to a base or base to an acid may cause a violent reaction.

Chemical stability

Stable under recommended handling and storage conditions (see section 7).

Possibility of hazardous reactions

Hazardous polymerization will not occur.

Conditions to avoid

Direct sunlight, extremely high or low temperatures, and incompatible materials.

Incompatible materials

Non acid-proof metals (such as aluminum, copper and iron), bases, unalloyed steel, galvanized surfaces.

Hazardous decomposition products

Can liberate toxic and corrosive fumes of SO2 and SO3 under extreme conditions when boiled to dryness or heated above 600 ° C (1112 °F).

Section 11. Toxicological information

Acute toxicity

Note: When no route specific LD50 data is available for an acute toxin, the converted acute toxicity point estimate was used in the calculation of the product's ATE (Acute Toxicity Estimate).

	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation vapour LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Product Acute Toxicity Estimates	3495	NA	NA	NA	NA

Ingredient	Oral LD50, mg/kg	Skin LD50, mg/kg	Inhalation vapour LC50, mg/L/4hr	Inhalation Dust/Mist LC50, mg/L/4hr	Inhalation Gas LC50, ppm
Aluminum sulfate - (10043-01-3)	2,500.00, Rat - Category: 5	No data available.	No data available.	No data available.	No data available.

Carcinogen Data

CAS No.	Ingredient	Source	Value
0010043-01-3	Aluminum sulfate	IARC	Group 1: No; Group 2a: No; Group 2b: No; Group 3: No; Group 4: No;
		ACGIH	No Established Limit

Classification	Category	Hazard Description
Acute toxicity (oral)	---	Not Applicable
Acute toxicity (dermal)	---	Not Applicable
Acute toxicity (inhalation)	---	Not Applicable
Skin corrosion/irritation	1C	Causes severe skin burns and eye damage.
Serious eye damage/irritation	2	Causes serious eye irritation.
Respiratory sensitization	---	Not Applicable

Skin sensitization	---	Not Applicable
Germ cell mutagenicity	---	Not Applicable
Carcinogenicity	---	Not Applicable
Reproductive toxicity	---	Not Applicable
STOT-single exposure	---	Not Applicable
STOT-repeated exposure	---	Not Applicable
Aspiration hazard	---	Not Applicable

Possible routes of entry:

Symptoms and effects, both acute and delayed:

Contact with skin causes severe skin burns. Causes serious eye damage.

Acute Health Effects: the substance causes serious eyes damage and severe burns.

EYE: Contact causes serious eye damage. Causes permanent damage to the cornea, iris, or conjunctiva with redness, pain, swelling, blurred vision, and severe burns (Immediate). No delayed effects from eye contact are expected. No chronic effects from eye contact are known.

SKIN: Causes severe irritation which will progress to chemical burns. Symptoms may include redness, pain, serious skin burns, and blisters. (Immediate). No delayed effects from skin contact are expected. No chronic effects from skin contact are known.

INHALATION: May be corrosive to the respiratory tract. Prolonged exposure may cause irritation of the upper respiratory passages. (Immediate). May cause delayed pulmonary edema. No chronic effects from inhalation are known.

INGESTION: May cause burns or irritation of the linings of the mouth, throat, and gastrointestinal tract (Immediate). No delayed symptoms from ingestion are expected. No chronic effects from ingestion are known.

Indication of Any Immediate Medical Attention and Special Treatment Needed: If exposed or concerned, get medical advice and attention.

Most likely route(s) of exposure Skin, Eyes

Eyes Causes serious eye irritation.

Skin Causes severe skin burns and eye damage.

Section 12. Ecological information

Toxicity

Harmful to aquatic life.

Aquatic Ecotoxicity

Ingredient	96 hr LC50 fish, mg/l	48 hr EC50 crustacea, mg/l	ErC50 algae, mg/l
Aluminum sulfate - (10043-01-3)	186.00, Danio rerio	38.20, Daphnia	0.45, Ceriodaphnia dubia

Persistence and degradability

There is no data available on the preparation itself.

Bioaccumulative potential

No available information

Mobility in soil

No available information

Results of PBT and vPvB assessment

This product contains no PBT/vPvB chemicals.

Other adverse effects

No available information

Section 13. Disposal considerations

Waste treatment methods

Dispose of waste material in accordance with all local, regional, federal, provincial, state, territorial and international regulations.

Ecology - Waste Materials: Avoid release to the environment. This material is hazardous to the aquatic environment. Keep out of sewers and waterways.

Additional Information: Container may remain hazardous when empty. Continue to observe all precautions.

Section 14. Transport information

Classification Method: Classified as per Part 2, Sections 2.1 - 2.8 of the Transportation of Dangerous Goods Regulations.

	DOT / TDG (Domestic Surface Transportation)	IMO / IMDG (Ocean Transportation)	ICAO/IATA
UN number	UN3264	UN3264	UN3264
UN proper shipping name	UN3264, Corrosive liquid, acidic, inorganic, n.o.s., (contains aluminum sulfate), 8, III	Corrosive liquid, acidic, inorganic, n.o.s., (contains aluminum sulfate)	Corrosive liquid, acidic, inorganic, n.o.s., (contains aluminum sulfate)
Transport hazard class(es)	**TDG Hazard Class:** 8 **Sub Class:** Not Applicable	**IMDG:** 8 **Sub Class:** Not Applicable	**Air Class:** 8 **Sub Class:** Not Applicable
Packing group	III	III	III

Environmental hazards

Marine Pollutant: No;

Special precautions for user

No available information

Section 15. Regulatory information

Regulatory Overview The regulatory data in Section 15 is not intended to be all-inclusive, only selected regulations are represented.

NFPA Ranking
Health (blue) :3
Fire (red) :0
Reactivity (yellow) :1
Special (white) :ACID

This product has been classified in accordance with the hazard criteria Hazardous Products Regulations (SOR/2015-17) and the SDS contains all of the information required by those regulations.

Toxic Substance Control Act (TSCA):

Aluminum sulfate (Present)

Water (Present)

EPCRA 311/312 Chemicals and RQs (lbs):

Aluminum sulfate (5,000.00)

Canadian Domestic Substance List (DSL):

Aluminum sulfate

Water

Canadian Non-Domestic Substance List (NDSL):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

New Jersey RTK Substances (>1%):

Aluminum sulfate

Pennsylvania RTK Substances (>1%):

Aluminum sulfate

Proposition 65 - Carcinogens (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Developmental Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Female Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 - Male Repro Toxins (>0.0%):

To the best of our knowledge, there are no chemicals at levels which require reporting under this statute.

Proposition 65 Label Warning:

This product contains no chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Chemical Name (CAS Number)	US TSCA	Australia AICS	Korea ECL	EU EINECS	EU ELINCS	EU SVHC	EN NLP	Mexico INSQ

Aluminum sulfate (0010043-01-3)	Yes	Yes	Yes	Yes	No	No	No	Yes

Chemical Name (CAS Number)	China IECSC	Japan ENCS	Japan ISHL	Japan PDSCL	Japan PRTR 1	Japan PRTR 2	Philippines PICCS	New Zealand NZIOC
Aluminum sulfate (0010043-01-3)	Yes	Yes	No	No	No	No	Yes	Yes

Section 16. Other information

Revision Date 10/03/2023

The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, expressed or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to our products. Customers/users of this product must comply with all applicable health and safety laws, regulations, and orders.

The full text of the phrases appearing in section 3 is:

H290 May be corrosive to metals.

H318 Causes serious eye damage.

H402 Harmful to aquatic life.

Disclaimer: The information presented herein is supplied as a guide to those who handle or use this product. Safe work practices must be employed when working with any materials. It is important that the end user makes a determination regarding the adequacy of the safety procedures employed during the use of this product.

Revision Summary

Section :	Modification
2	Updated skin corrosion category to H314 1C to match Transportation packing group III

Handle product with due care and avoid unnecessary contact. This information is supplied under U.S. OSHA'S "Right to Know" (29 CFR 1910.1200) and Canada's WHMIS regulations. Although certain hazards are described herein, we cannot guarantee these are the only hazards that exist. The information contained herein is based on data available to us and is believed to be true and accurate but it is not offered as a product specification. No warranty, expressed or implied, regarding the accuracy of this data, the hazards connected with the use of the product, or the results to be obtained from the use thereof, is made and Chemtrade and its affiliates assume no responsibility. Chemtrade is a member of the CIAC (Chemistry Industry Association of Canada) and adheres to the codes and principles of Responsible Care™.

Responsible Care® Our commitment to sustainability. Gestion responsable™ Notre engagement envers le développement durable.